HISTORIC AMERICAN ENGINEERING RECORD

INDEX TO PHOTOGRAPHS

Boulder Dam-San Bernardino (115kV) Transmission Line Eldorado Substation to Ivanpah Substation Primm Vicinity Clark County Nevada HAER No. NV-45

Note: Because the subject is a linear resource, the photographs are organized north to south in a linear order; beginning with views of the northernmost elements of the line and ending with the southernmost view. Each tower photographed is followed immediately with its detail views. The numbers following the caption in brackets represent the order in which the photographs were exposed and their corresponding view number on the photographer's field notes & map. Tower numbers 1445 to 1217

Stephen D. Schafer, Photographer, December 2009

- NV-45-1 CONTEXT **VIEW** OF ELDORADO **SUBSTATION** NORTHERNMOST END OF LINE. NO HISTORIC TOWERS EXIST HERE BUT POWER FROM THIS SUBSTATION TRAVELS TO THREE STRAIGHT POLES AT FAR LEFT OF PHOTO, THEN CROSSES TO THE THREE WOOD POLES AT CENTER OF FRAME, AND CONNECTS TO THE MODERN H-FRAME, WOOD SUSPENSION TOWERS AT FAR RIGHT OF PHOTO (SIMILAR LOOKING TO HISTORIC TOWERS), BEFORE CONNECTING TO THE REMAINING HISTORIC LINE AT TOWER #1445. (ABOUT 1.4 MILES WEST NORTHWEST OF SUBSTATION). VIEW FACING SOUTHWEST. [16]
- NV-45-2 CONTEXT WITH SUSPENSION TOWER #1445 AND ACCESS ROAD. TOWER #1445 IS THE NORTHERNMOST AND FIRST HISTORIC TOWER IN THIS SECTION OF THE BOULDER DAM SAN BERNARDINO (115kV) TRANSMISSION LINE. (SOME WOOD REPLACEMENT TOWERS EXIST IN BACKGROUND). VIEW FACING SOUTHWEST. [17]
- NV-45-3 SIDE CONTEXT OF LINE AND TOWERS ACROSS ELDORADO VALLEY DESERT, WITH OTHER MODERN LINES IN BACKGROUND. VIEW FACING SOUTHWEST. [18]
- NV-45-4 OBLIQUE OF TYPICAL SUSPENSION TOWER #1409 WITH 12' SCALE (In Tenths). METAL "X" SIGN ON TOP. VIEW FACING NORTHEAST. [19]

NV-45-5	DETAIL OF TOP OF SUSPENSION TOWER #1409. VIEW FACING WEST. [20]
NV-45-6	DETAIL OF SUPPORT LEG OF SUSPENSION TOWER #1409. SHOWING TYPICAL STENCILED NUMBER, AND TYPICAL "L" BRACKETS AND BOLTS. 24" SCALE TAPED TO LEG AT RIGHT ANGLE. VIEW FACING NORTHEAST. [21]
NV-45-7	OBLIQUE OF FULL DEAD-END H-FRAME TOWER #1396. VIEW FACING SOUTHWEST. [22]
NV-45-8	OBLIQUE OF DEAD-END H-FRAME TOWER #1396 SHOWING GUY WIRE POSITIONS AT FOUR CORNERS. VIEW FACING SOUTHWEST. [23]
NV-45-9	OBLIQUE OF FULL DEAD-END A-FRAME TOWER #1395. TOWER HAS LEG EXTENSIONS TO COMPENSATE FOR UNEVEN TERRAIN. VIEW FACING SOUTHWEST. [24]
NV-45-10	DETAIL OF BOTTOM OF DEAD-END A-FRAME TOWER #1395; VIEW FROM DOWN SLOPE. LEG EXTENSION ALLOWS FOR SLOPED TERRAIN. 12' SCALE (In Tenths) PLACED ON HORIZONTAL CROSSBAR WHICH IS LEVEL AT O°. VIEW FACING SOUTHWEST. [25]
NV-45-11	DETAIL OF LINE CONNECTIONS, INSULATORS AND TOP OF DEAD-END A-FRAME TOWER #1395; VIEW FROM UPSLOPE. VIEW FACING NORTH NORTHWEST. [26]
NV-45-12	OBLIQUE FULL VIEW OF MODIFIED H-FRAME THREE-LEG DEAD-END TOWER #1390; SHOWING EXTREME DIRECTION CHANGE. TWO LEGS HAVE EXTENSIONS TO ACCOMMODATE SLOPE. VIEW FACING NORTHWEST. [27]
NV-45-13	ORTHOGONAL VIEW OF MODIFIED H-FRAME THREE-LEG DEAD-END TOWER #1390. VIEW FACING NORTHWEST. [28]
NV-45-14	DETAIL VIEW OF TOP OF MODIFIED H-FRAME THREE-LEG DEAD-END TOWER #1390. SHOWING INSULATORS, AND GUY WIRE ATTACHMENTS. VIEW FACING NORTHWEST. [29]

- NV-45-15 DETAIL VIEW OF BOTTOM OF MODIFIED H-FRAME THREE-LEG DEAD-END TOWER #1390. SHOWING FOOTINGS AND LEG EXTENSIONS WITH 12' SCALE (In Tenths). VIEW FACING NORTHWEST. [30]
- NV-45-16 CONTEXT VIEW OF TOP OF MODIFIED H-FRAME THREE-LEG DEAD-END TOWER #1390. SHOWING LINES AND SUSPENSION TOWER FAR LEFT. VIEW FACING NORTHWEST. [31]
- NV-45-17 CONTEXT VIEW SHOWING H-FRAME SUSPENSION TOWER #3081 ON THE ELDORADO SIDE OF THE McCULLOUGH PASS. A-FRAME DEAD-END TOWER IN BACKGROUND IS TOWER #1380 AT APEX OF PASS. VIEW FACING WEST NORTHWEST. [32]
- NV-45-18 CONTEXT FROM APEX OF McCULLOUGH PASS, SHOWING SUSPENSION TOWERS AND LINE TRAVELING TOWARD ELDORADO SUBSTATION. LINES TRAVEL UNDER MODERN TRANSMISSION LINES FROM CENTER OF PHOTO TO LOWER RIGHT. VIEW FACING EAST SOUTHEAST. [34]
- NV-45-19 FULL SIDE VIEW OF A-FRAME DEAD-END TOWER #1380 AT TOP OF McCULLOUGH PASS. BASE HAS SHORT LEG EXTENSIONS FOR UNEVEN TERRAIN. VIEW FACING NORTH NORTHEAST. [37]
- NV-45-20 DETAIL VIEW OF TOP SECTION OF A-FRAME DEAD-END TOWER #1380 AT APEX OF McCULLOUGH PASS. SHOWING STEEL LATTICE AND CLIMBING PEGS ALONG SIDE OF TOWER. VIEW FACING NORTH. [35]
- NV-45-21 CONTEXT VIEW FROM APEX OF McCULLOUGH PASS, TOWARD ROACH. LINES TRAVEL THROUGH CENTER OF PHOTO; HISTORIC TOWERS BLEND INTO TERRAIN (TOWER #1379 IS BELOW SECOND WOOD UTILITY POLE). VIEW FACING WEST. [36]
- NV-45-22 CONTEXT SHOWING TYPICAL SUSPENSION TOWERS TRAVELING DOWN FROM McCULLOUGH PASS ACROSS DESSERT TOWARDS ROACH. SHOWS TYPICAL ARC OF LINES FROM TOWER TO TOWER AND ACCESS ROAD. VIEW FACING SOUTHWEST. [33]

NV-45-23	CONTEXT WITH TRANSPOSITION TOWER #1356 AND ACCESS ROAD. VIEW FACING WEST SOUTHWEST. [38]
NV-45-24	FULL SIDE VIEW OF TRANSPOSITION TOWER #1356. VIEW FACING NORTHWEST. [39]
NV-45-25	DETAIL VIEW OF STAMPED METAL STEEL LATTICE WORK ON SUPPORT LEG OF TRANSPOSITION TOWER #1356. METAL PARTS ARE STAMPED WITH LETTERS AND NUMBERS TO IDENTIFY PARTS. FE3-H STAMPED ON HORIZONTAL BOTTOM "L" METAL; EH14-H STAMPED ON DIAGONAL "L" METAL; EH16-H STAMPED ON VERTICAL CORNER "L" METAL. GROUND STRAP CONNECTION CAN BE SEEN ON TOP BOLT. A THICK, BLACK, TAR-BASED UNDERGROUND COATING IS EXPOSED IN AREAS; IT IS DETERIORATED BUT REMAINS PARTIALLY ADHERED TO BELOWGROUND METAL PARTS. STAMPING, GROUND STRAPS AND COATING ARE TYPICAL OF ALL TOWERS. VIEW FACING NORTHWEST. [40]
NV-45-26	ORTHOGONAL SIDE VIEW OF TYPICAL DEAD-END A-FRAME TOWER #1332. VIEW FACING NORTH NORTHWEST. [41]
NV-45-27	DETAIL VIEW OF TYPICAL TOP OF DEAD-END A-FRAME TOWER #1332. VIEW FACING EAST NORTHEAST. [42]
NV-45-28	ORTHOGONAL VIEW OF TYPICAL DEAD-END A-FRAME TOWER #1332. VIEW FACING EAST NORTHEAST. [43]
NV-45-29	DETAIL VIEW OF TYPICAL CORNER OF DEAD-END A-FRAME TOWER #1332. WITH 12' SCALE (In Tenths) FOLLOWING ANGLE OF CORNER. VIEW FACING NORTH NORTHWEST. [44]
NV-45-30	DETAIL VIEW OF BASE OF DEAD-END A-FRAME TOWER #1332. SHOWING TYPICAL BOLTS, GROUND STRAP, STAMPED PART NUMBERS AND STENCIL. VIEW FACING NORTH NORTHEAST. [45]
NV-45-31	CONTEXT VIEW OF SUSPENSION TOWERS CRESTING BLUFF, DESCENDING TOWARD ROACH DRY LAKE. ACCESS ROAD CROSSES UNDERNEATH LINE. VIEW FACING SOUTHEAST. [46]

- NV-45-32 OBLIQUE OF FULL DEAD-END A-FRAME TOWER #1316 AT CHANGE OF DIRECTION IN LINE. LINE TRAVELS NORTHEAST FROM ROACH AND CHANGES DIRECTION HERE TRAVELING EAST NORTH EAST ACROSS OPEN DESERT TO McCULLOUGH PASS FROM THIS TOWER. VIEW FACING EAST NORTHEAST. [13]
- NV-45-33 DETAIL OF SUSPENSION TOWER #1315 LEG EXTENSION; TYPICAL WHERE LAND SLOPES AND TERRAIN IS UNEVEN. WITH 12' SCALE (In Tenths). VIEW FACING EAST. [14]
- NV-45-34 CONTEXT VIEW OF DEAD-END A-FRAME TOWER # 1283 EAST OF ROACH DRY LAKE. SHOWING MANY MORE MODERN TRANSMISSION LINES AND TOWER TYPES ALL CONVERGING TO CROSS THE CALIFORNIA/NEVADA BORDER NEAR PRIMM. VIEW FACING EAST NORTHEAST. [47]
- NV-45-35 DEAD-END A-FRAME TOWER #1274 AND LINE OVER UNION PACIFIC RAILROAD TRACKS SOUTH OF ROACH DRY LAKE. (CONCRETE CULVERT UNDER TRACKS DATE STAMPED 1927). VIEW FACING NORTHEAST. [12]
- NV-45-36 CONTEXT VIEW OF LINE EAST OF PRIMM VALLEY RESORT AND CASINO. SHOWING PROXIMITY TO PRIMM; THIS IS THE ONLY TRANSMISSION LINE THAT PASSES THIS CLOSE TO PRIMM (ALL OTHERS JOG NORTH OF THE TOWN). (TOWER #1263 IN FOREGROUND). VIEW FACING EAST. [48]
- NV-45-37 CONTEXT VIEW SHOWING SUSPENSION TOWER SURROUNDED BY THE REAR PARKING LOT OF THE PRIMM VALLEY FASHION OUTLET MALL. HISTORIC TOWER HAS BEEN ACCOMMODATED BY BUILDING A PARKING ISLAND AROUND IT IN ITS ORIGINAL POSITION. VIEW IS TOWARD CALIFORNIA STATE BORDER AND INTERSTATE 15 WHICH CAN BE SEEN JUST BEYOND THE PALM TREES. VIEW FACING EAST. [49]

NV-45-38	CONTEXT SHOWING TYPICAL SUSPENSION TOWERS ACROSS IVANPAH DRY LAKE FROM CALIFORNIA/NEVADA BORDER INTO CALIFORNIA AND UP TOWARD MOUNTAIN PASS. SHOWS TYPICAL ARC OF LINES FROM TOWER TO TOWER. (TOWER #1256 IN FOREGROUND). VIEW FACING SOUTHWEST. [15]
NV-45-39	CONTEXT OF TOWERS ACROSS IVANPAH LAKE (TOWER #1255 IN FOREGROUND). VIEW FACING SOUTHWEST. [1]
NV-45-40	DETAIL VIEW OF TYPICAL STEEL LATTICE AND GENTLY DOMED CONCRETE FOOTING ON TOWER #1255 IN IVANPAH DRY LAKE. VIEW FACING WEST SOUTHWEST. [3]
NV-45-41	OBLIQUE FULL VERTICAL VIEW OF SUSPENSION TOWER #1255 IN IVANPAH DRY LAKE. VIEW FACING WEST SOUTHWEST. [2]
NV-45-42	CONTEXT VIEW AT EDGE OF IVANPAH DRY LAKE, WITH PRIM VALLEY CASINO RESORTS IN BACKGROUND AT CALIFORNIA/NEVADA BORDER CROSSING. ALL TOWERS IN IVANPAH DRY LAKE ARE SUSPENSION TOWERS AND ALL HAVE CONCRETE FOOTINGS WITH GENTLY DOMED TOPS. VIEW FACING NORTHEAST. [11]
NV-45-43	ORTHOGONAL VIEW OF TRANSPOSITION TOWER # 1232 WITH 12' SCALE (In Tenths). VIEW FACING NORTHEAST. [4]
NV-45-44	DETAIL VIEW OF TOP SECTION OF TRANSPOSITION TOWER # 1232. VIEW FACING NORTH. [5]
NV-45-45	OBLIQUE FULL SIDE VIEW TRANSPOSITION TOWER # 1232. VIEW FACING NORTH. [6]
NV-45-46	DETAIL CLOSE UP VIEW OF INSULATORS FROM BELOW TRANSPOSITION TOWER # 1232. VIEW FACING EAST NORTHEAST. [7]
NV-45-47	CONTEXT VIEW OF SUSPENSION TOWER #1217 TOWARDS IVANPAH DRY LAKE AND CALIFORNIA/NEVADA BORDER. TOWER #1217 IS THE SOUTHERNMOST TOWER ON THIS

SECTION OF THE LINE. VIEW FACING NORTHEAST. [8]

BOULDER DAM - SAN BERNARDINO (115kV) TRANSMISSION LINE HAER No. NV-45 (Page 7)

- NV-45-48 DETAIL CLOSE UP OF TYPICAL FOOTING OF SUSPENSION TOWER (#1217) USUALLY UNDERGROUND AT HORIZONTAL CROSSBAR BUT WASHED OUT BY FLOODING. GROUND STRAP VISIBLE ON TOP BOLT AT RIGHT SIDE OF SUPPORT. 24" SCALE TAPED ACROSS SUPPORT. VIEW FACING NORTHEAST. [10]
- CONTEXT VIEW SHOWING SMALLER SCALE OF HISTORIC NV-45-49 SUSPENSION TOWER #1217 PARALLEL TO **MODERN** TRANSMISSION TOWER; BOTH TOWERS ARE SIMILAR DISTANCE FROM CAMERA. TOWER #1217 IS THE SOUTHERNMOST TOWER ON THIS SECTION OF THE LINE. VIEW FACING NORTHEAST. [9]

Stephen D. Schafer, Photographer, August 29, 2010

- NV-45-50 CONTEXT VIEW OF SECTIONALIZING SWITCH TOWER #1264, EAST OF PRIMM VALLEY RESORT AND CASINO. VIEW FACING SOUTHWEST. [50]
- NV-45-51 FULL OBLIQUE VERTICAL VIEW OF SECTIONALIZING SWITCH TOWER #1264 SIMILAR TO A-FRAME TOWER (THIS TOWER HAS BEEN ALTERED FROM ITS ORIGINAL CONFIGURATION. VIEW FACING NORTHEAST [52]
- NV-45-52 DETAIL VIEW OF TOP OF SECTIONALIZING SWITCH TOWER #1264. SHOWS UNIQUE FOUR UNIT VERTICAL INSULATORS AND INVERTED CROSS-ARM. VIEW FACING NORTHEAST. [51]